Greatest Common Divisor

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

Given a positive integer sequence $a_1, a_2, \cdots, a_n$ of length n, you need to perform exactly k operations. For each operation, you need to choose one element and increase its value by 1.

Maximize the greatest common divisor of all elements after the operations.

Input

There are multiple test cases. The first line of the input contains an integer T ($1 \leq T \leq 10^3$), indicating the number of test cases. For each test case:

The first line contains two integers n and k ($1 \leq n \leq 10^6$, $1 \leq k \leq 10^{12}$) indicating the length of the sequence and the number of operations.

The second line contains n integers $a_1, a_2, \cdots, a_n$ ($1 \leq a_i \leq 10^6$) indicating the sequence.

It's guaranteed that the sum of n of all test cases will not exceed 10^6, the sum of $\max a_i$ of all test cases will not exceed 10^6, and the sum of k of all test cases will not exceed 10^{12}.

Output

For each test case output one line containing one integer, indicating the maximum possible greatest common divisor of all elements after exactly k operations.

Example

standard input	standard output
2 3 6 2 9 8 3 7 2 9 8	5 2

Note

For the first sample test case, we can change the sequence to $5, 10, 10$, and the greatest common divisor is 5.

For the second sample test case, we can change the sequence to $6, 10, 10$, and the greatest common divisor is 2.